



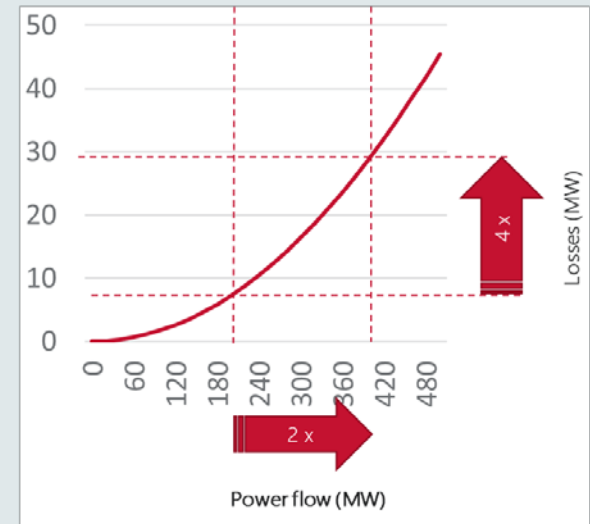
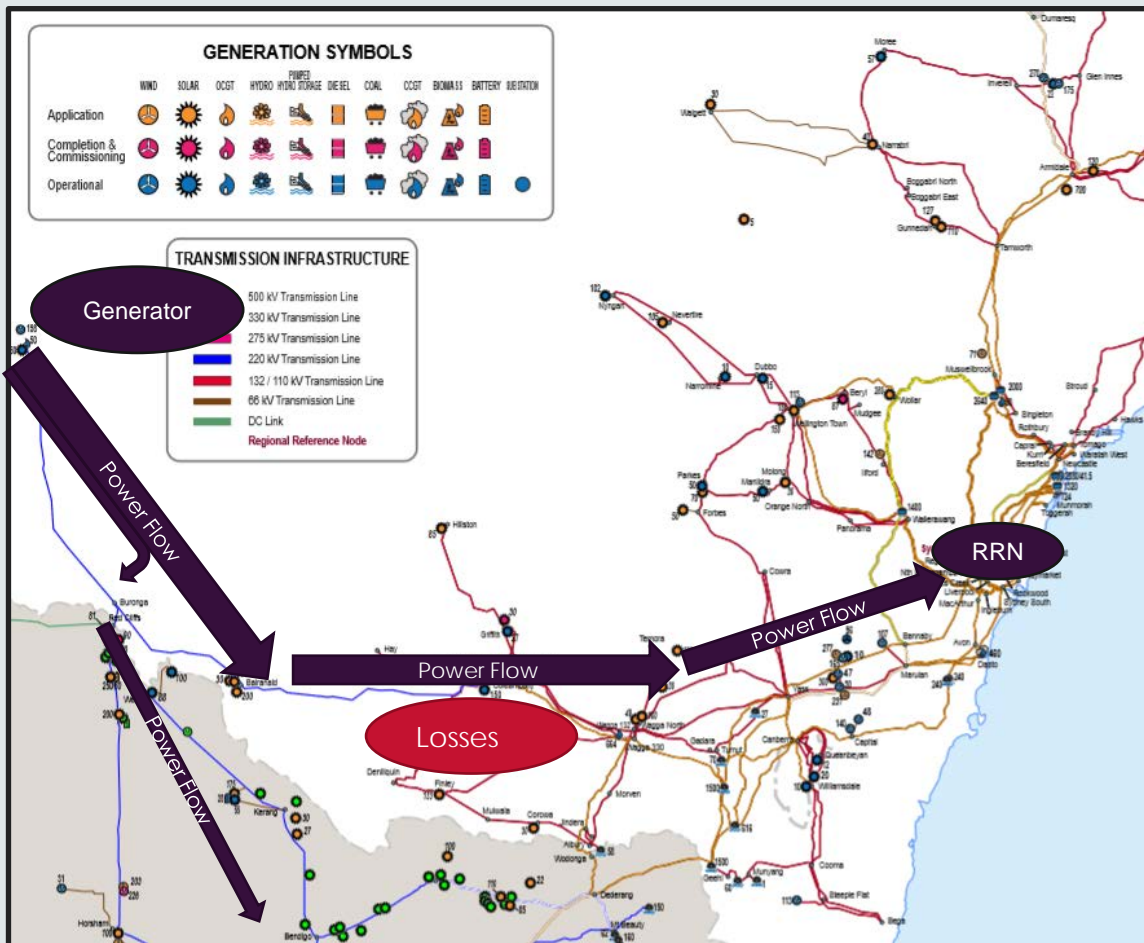
Marginal Loss Factors (MLF)

AEMC Consultation

4 July 2019

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What is a Marginal Loss Factor (MLF) ?



Losses are real:
As current flow increases over distance, losses are squared.

1 MW dispatched from Broken Hill will lose 25% once it reaches Sydney.

Why are loss factors important ?

Revenue/cost estimation and budgeting

- One of the locational signals for investment decision making

Renewable energy power stations

- For large-scale generation certificate (LGC) calculations by the CER

Dispatch process

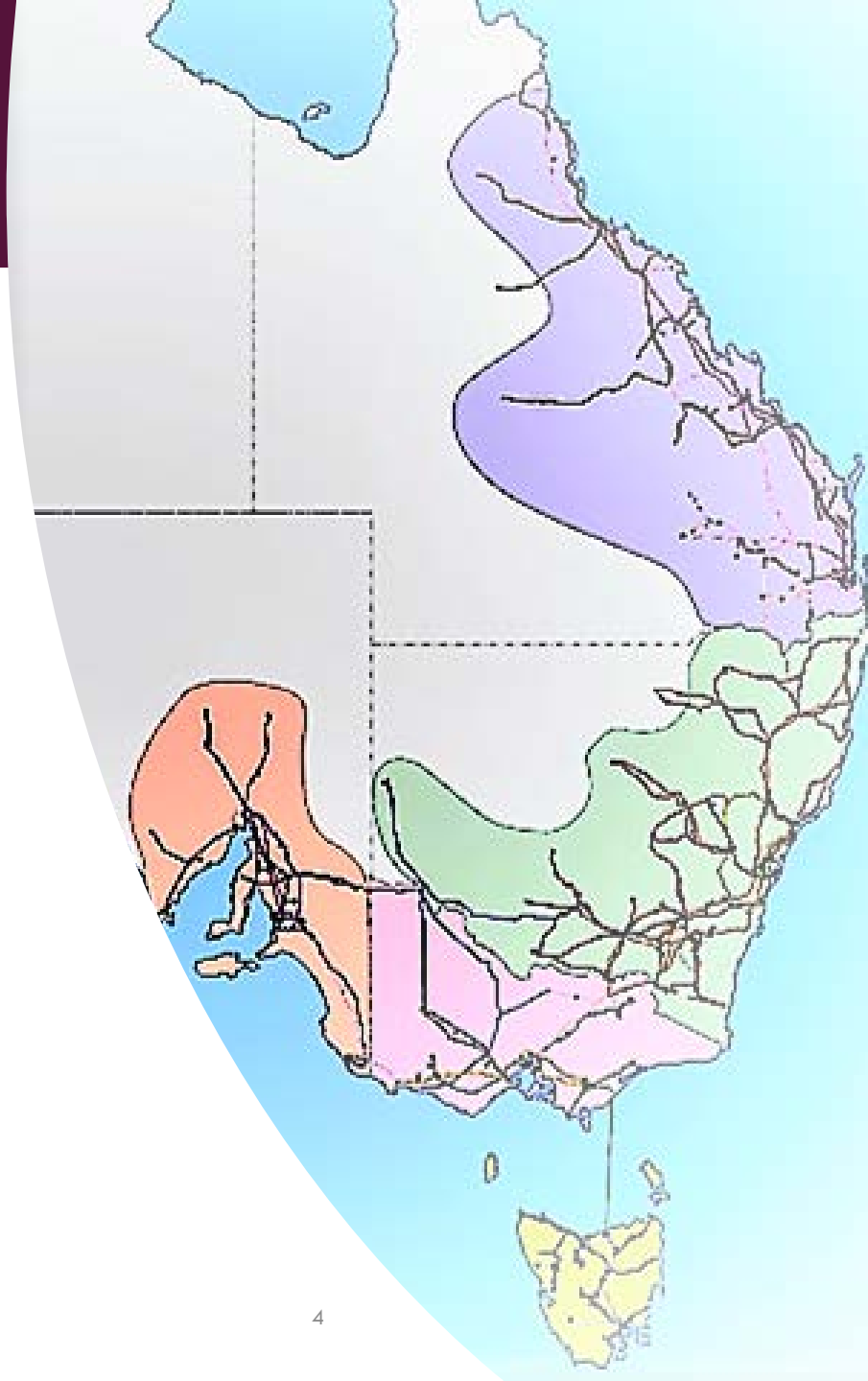
- Refers bid price from connection point to the Regional Reference Node to enable economically efficient dispatch

Settlement process

- To balance settlements between load and generation. (Residues are NOT an error)

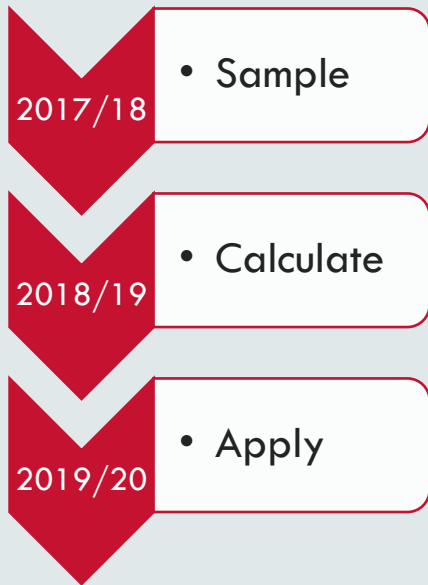
Why have MLFs been changing?

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- **VOLUME:** Unprecedented increase of 4,500MW across 46 new remote generators.
 - **REMOTE:** Increase in generation in areas of low load
 - **CAPACITY:** Increase in generation in areas of low transmission capacity
 - **SATURATION:** Increase in generation clusters of the same output profile (solar)



MLF Consulted Methodology

Forward looking MLF methodology - based on forecasting - consulted and agreed with market participants.



In present NEM transformation, a lot can change in this 3 year timeframe !

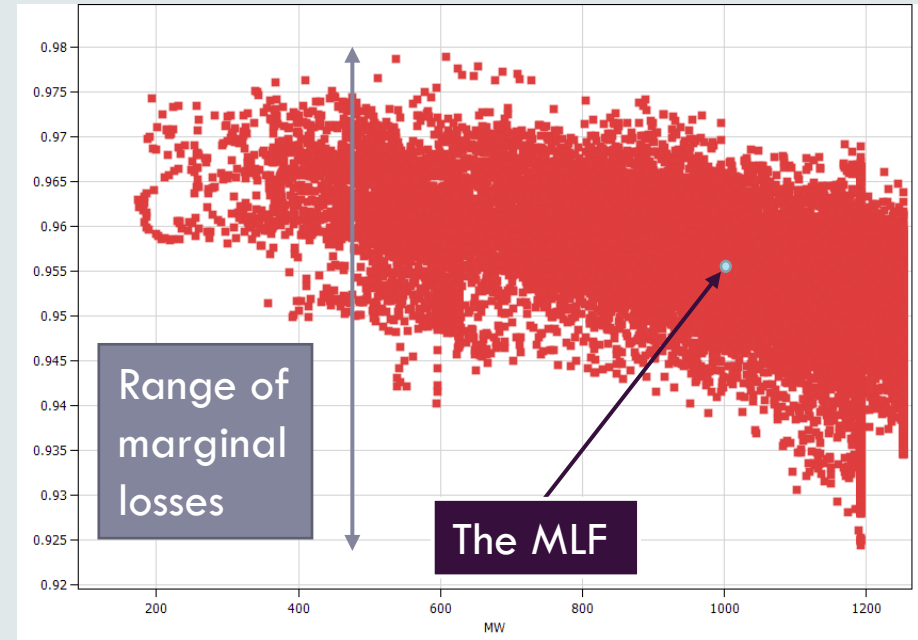
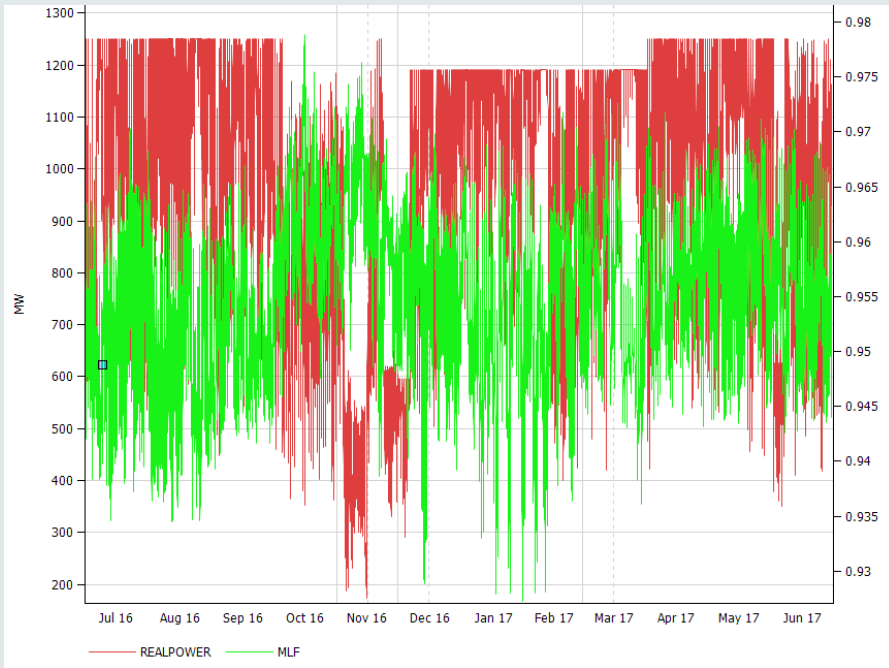
Simulate every half hour in the next year

- Forecasted connection point forecast
- Generator availability
- New projects with expected start-dates, hold points etc
- Rules on generation adjustments to meet demand
- Full transmission network

One “static” MLF value for whole year

- For each Transmission Node Identifier (TNI)
- Volume weighted average of half hour MLFs
- Some have dual MLFs (e.g. connection points with storage)

Data for one TNI: Time series and Scatter plot

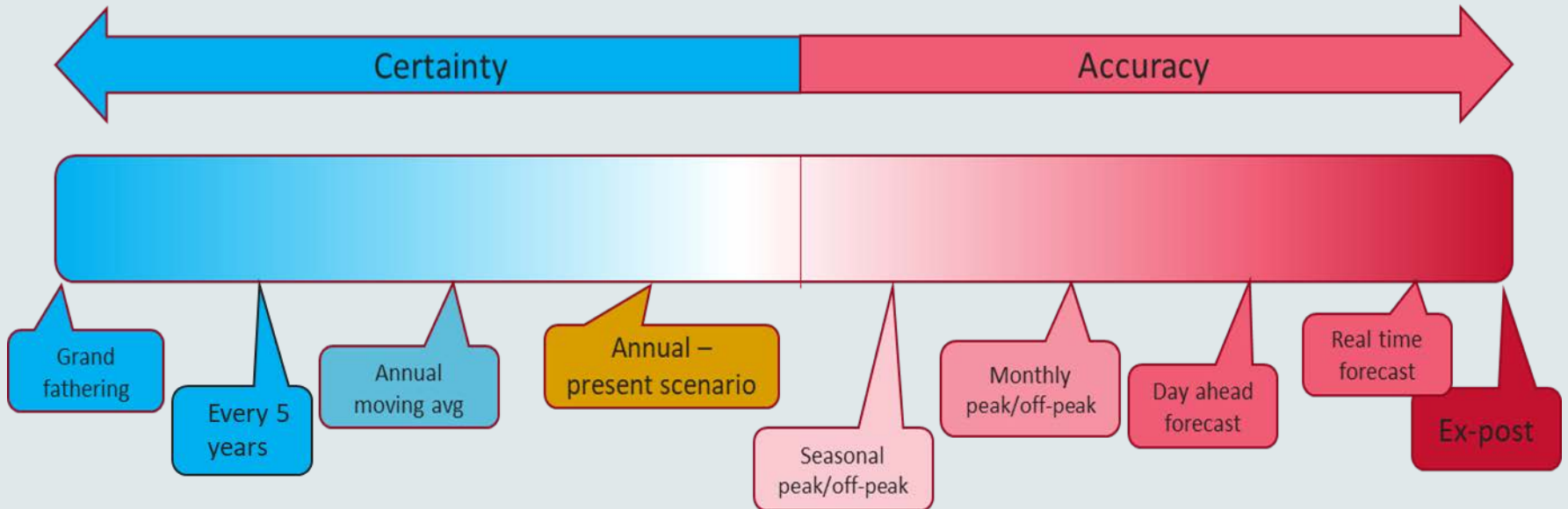


$$\textit{Static MLF} = \frac{\sum (MLF_t * G_t)}{\sum G_t}$$

MLF balance

Ideal scenario:

Accurate reflection of losses with long term certainty (or visibility)



AEMO Activity

AEMO Prepares the MLF's for the NEM as prescribed under Clauses 3.6.1 and 3.6.2 of the NER

AEMO will be consulting on the Methodology upon conclusion of this rule change process – Maybe earlier.

In the meantime, AEMO proposes:

Updating the software that calculates MLF – TPRICE

More frequent publishing (NOT implementing) of MLF's - quarterly ?

Sharing of Model for “accredited” consultants